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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/856,973	05/30/2001	Kenichi Tomioka	500.40168X00	5284

20457 7590 09/26/2002

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EXAMINER

SELLERS, ROBERT E

ART UNIT	PAPER NUMBER
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1712

DATE MAILED: 09/26/2002

7

Please find below and/or attached an Office communication concerning this application or proceeding.

TC-7

<b>Office Action Summary</b>	Application No.	Applicant(s)	
	09/856,973	TOMIOKA ET AL.	
	Examiner	Art Unit	
	Robert Sellers	1712	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 20 September 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-3 and 10-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3 and 10-16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                             | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____  |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)         | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____                                    |

The amendment filed September 20, 2002 is objected to under 35 U.S.C. 132 because it introduces new matter into the disclosure. 35 U.S.C. 132 states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is the replacement of the "2-undecylimidazole (C11Z" on page 25, Example 4, line 20 with 1-cyanoethyl-2-methylimidazolium trimellitate (2ME-CNS." Although Example 4 of Table 1 on page 29 shows the use of 2MZ-CNS, there is no documentation indicating whether the C11Z of the description of Example 4 on page 25 or the tabulated 2MZ-CNS in Table 1 is the actual curing accelerator utilized.

Furthermore, Shikoku Chemicals Catalogue of Chemical Products merely names 2MZ-CNS with an added written footnote alleging that the acronym is representative of 1-cyanoethyl-2-methylimidazolium trimellitate. There is no Japanese portion of the catalog that reflects an English translation of 1-cyanoethyl-2-methylimidazolium trimellitate.

Applicant is required to cancel the new matter in the reply to this Office Action.

The 35 U.S.C. 103(a) rejection involving Gaku et al. is rescinded since the claimed amount of curing accelerator (C) present in a maximum amount of 5 parts by weight is not recited. The 35 U.S.C. 103(a) rejection over Dershem in view of Namba et al. or Japanese '615 or '741 is withdrawn since the claimed relative proportions of cyanate compound (A) to epoxy resin (B) are not recited.

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The text of section 103(a) of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1-3 and 10-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hefner, Jr. in view of Dershem and (Namba et al. or Japanese '615 or '741).

The rejection is maintained for the reasons of record set forth in the previous Office action.

The arguments filed September 20, 2002 have been considered but are unpersuasive.

The comparisons between Example 1 vs. Comparative Examples 1 and 2 in Table 1 on page 29, as well as Example 5 vs. Comparative Examples 6 and 7 in Table 2 on page 32 of the specification are inconclusive. Example 1 contains 95 parts by weight of the dicyclopentadiene epoxy resin (HP7200H) and 55 parts by weight of the brominated bisphenol A epoxy resin (ESB400T). Comparative Example 1 contains 65 parts by weight of bisphenol A epoxy resin (DER331L) and 55 parts by weight of the brominated bisphenol A epoxy resin. Comparative Example 2 contains 90 parts by weight of the bisphenol A epoxy resin.

Example 5 contains the same proportions of the identical species of epoxy resins as Example 1. Comparative Example 6 contains the same types and amounts of epoxy resins as Comparative Example 1. Comparative Example 7 contains the same species and contents of epoxy resins as Comparative Example 2.

It cannot be ascertained whether the differences in evaluation results is a consequence of the claimed dicyclopentadiene epoxy resin over the bisphenol A epoxy resin of Henson et al. The different results could also be a function of the diverse amounts of dicyclopentadiene epoxy resin vs. bisphenol A epoxy resin, and the additional presence of the brominated bisphenol A epoxy resin in Examples 1 and 5 with respect to the comparison of Example 1 vs. Comparative Example 2, and Example 5 vs. Comparative Example 7.

Hefner et al. (col. 12, lines 52-57) sets forth a laminate wherein fibers are impregnated with the formulation. Japanese '741 establishes the efficacy of utilizing cyanate ester/epoxy resin blends as a prepreg for the fabrication of a circuit board. It would have been obvious to apply the prepreg of Hefner et al. for a particular use such as the circuit board of Japanese '741 in order to attain "high mechanical strength or toughness (Hefner et al., col. 12, lines 47-50)." It is a matter of ordinary skill in the art to employ the prepreg of Hefner et al. in the production of a circuit board having a metal foil as required in claims 14 and 15 in order to impart electrical conductivity for the electronic components.

Namba et al. and the Japanese patents are relied upon as secondary references to supplement Hefner et al. and need not disclose each component of the composition.

Claims 1-3 merely require a composition which embrace the teachings of each of the applied prior art. Dershem is relied upon to supplement Hefner et al. and Gaku et al. and need not recite each and every element of the claims.

The disclosure of a combination of a metal catalyst and an imidazole with an antioxidant in a polycyanate ester/epoxy resin blend is relevant to the equivalent composition of Hefner et al. regardless of the utility based on the common components. Dershem in column 9, lines 7-9 espouses the incorporation of an antioxidant to a high temperature polymer regardless of the type of filler to improve the thermo-oxidative stability.

It would have been obvious to improve the thermo-oxidative stability of the high temperature cyanate ester/epoxy resin polymer blends of Hefner et al. and Gaku et al. by the inclusion of the antioxidant of Dershem based on the common components of the cyanate ester and epoxy resin as the high temperature polymers.

Hefner et al. (col. 2, lines 17-20 ; col. 4, lines 25-28 and col. 5, lines 8-11 and col. 11, lines 60-65) set forth most preferably from about 30-75% by weight of a polycyanate blend (A) and (B), from about 25-60% by weight of an epoxy resin and from 0.001-5% by weight of cobalt naphthenate. Dershem (col. 7, lines 51-53 and col. 9, lines 23-26) espouses the incorporation of between about 1.0-10.0% by weight relative to the epoxy resin of an imidazole and from about 0.5-1.0% by weight of an antioxidant.

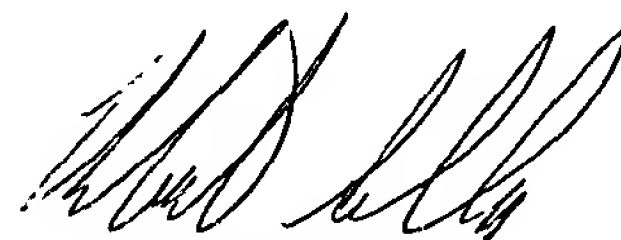
The term "type" should be deleted from claim 1, lines 2, 10 and 16; claim 10, line 3; claim 11, line 14; claim 12, line 2 and claim 16, line 2 to clearly define the cyanate compound (A) consistent with claim 11, line 2. The term "type" embraces modifications and derivatives of the cyanate compound not contemplated.

The proper Markush language "selected from the group consisting of" should be instituted in claim 16, lines 4 and 6.

The amendment necessitated the new ground of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

(703) 308-2399 (Fax no. (703) 872-9311)  
Monday to Friday from 9:30 to 6:00 EST



Robert Sellers  
Primary Examiner  
Art Unit 1712

rs  
9/24/02